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ABSTRACT

This paper describes the development of an educational partnership between two disparate and geographically separated institutions--the Pennsylvania State University (PSU) and Saint Joseph's University (SJU) (Pennsylvania)--that is specifically focused on the food industry and, more specifically, the development and launch of new food products. This partnership features a new product development and innovation management course that links the students and faculty of PSU and SJU for the purpose of leveraging the respective competencies and specialties of the two institutions: food science and agribusiness at PSU and food marketing at SJU. This paper discusses how this unique partnership began, what it was hoped would be accomplished, how the parameters evolved, the educational and information technology used to support the joint efforts, what was learned about both educational partnerships and technology during three years of working together, and next steps for the future. (MES)

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The Lions and the Hawks: Using Videoconferencing and Web Technology to Deliver a Cross-Campus New Product Innovation Course

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Introduction

This paper describes the development of an educational partnership between two disparate and geographically separated institutions - Penn State University (PSU) and Saint Joseph's University (SJU) - that is specifically focused on the food industry and, more specifically, the development and launch of new food products. This partnership features a new product development (NPD) and innovation management course that links the students and faculty of PSU and SJU for the purpose of leveraging the respective competencies and specialties of the two institutions: food science and agribusiness at Penn State and food marketing at Saint Joseph's. We will discuss how this unique partnership began, what we hoped and hope to accomplish, how the parameters have evolved, the educational and information technology used to support our joint efforts, what we have learned about both educational partnerships and technology during three years of working together, and next steps for the future.

Background

Organizations in today's business world increasingly rely on outsourcing, partnerships and strategic alliances across a wide range of business processes and activities. Much of this is fueled by a belief in the strategic management theory of core competencies. This theory holds that organizations learn to perform a set of activities or processes very well and that a firm's strategy should be based on leveraging these competencies. Adherence to this theory leads to narrowing the scope of activities performed by all but the largest and most diversified firms, giving rise to the need for substantial outsourcing and the growth of partnerships and alliances between organizations with complementary competencies. Similarly, educational institutions possess different competencies or skill sets, and this, along with increasing financial pressures, has led schools and colleges to seek educational partners.

L. Lea

Saint Joseph's University is a small (3400 full time undergraduate students), private, comprehensive Catholic university located in Philadelphia. Saint Joseph's is one of 28 Jesuit colleges and universities in the U.S. In 1960, when Saint Joseph's was a much smaller (1800 students, all male) college, some leaders of the retail food industry in Philadelphia created a plan to found an Academy of Food Marketing, designed to offer professional education to young people in order to prepare them for management careers

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in food retailing. The Academy, through a combination of circumstances, became part of Saint Joseph's College, and began offering an undergraduate major in food marketing in 1962. It should be noted that the angle that "sold" Saint Joseph's on the Academy was that of addressing problems of world hunger, consistent with the social mission of the Jesuits. While that remains a real concern, the primary emphasis of the food marketing program at Saint Joe's is to educate undergraduate and graduate students and to serve the food industry.

Over the past forty years, the food marketing major has expanded its scope to the food supply chain "from farm to table" and has become the largest major (with 350 enrolled students) on campus. Saint Joseph's University has become known for its food marketing program, which has received tremendous support from the food industry. The business school is named for Erivan Haub, owner and CEO of Tengelmann, one of the largest food retailers in Europe, and majority owner of the A&P food chain in the U.S. The USDA awarded Saint Joseph's a grant of over $12 million to establish a Center for Food Marketing. The activities of the Academy of Food Marketing are funded solely by grants and gifts from the food industry. As a result of both USDA and private funding, a new business school facility was built to meet the needs of students in the 21st century. The new building was designed to incorporate the latest technology. Mandeville Hall, which opened in September 1999, has enabled student to have access to global resources and to interact with colleagues and subject matter experts from around the world.

The College of Agricultural Sciences at the Pennsylvania State University, through the Departments of Food Science and Agricultural Economics and Rural Sociology, offers undergraduate and graduate degree programs in food science and in agribusiness. As a land grant institution, Penn State has distinctive competences in agricultural research and education as well as a very distinguished track record in the food science and technology areas. Penn State's Food Science program is considered a leader in the field and its specialty courses in ice cream and chocolate processing are recognized as the best in the industry.

During the mid-1990's, a group of Penn State faculty members, from both the food science and agribusiness areas, created a cross-disciplinary new food product innovation course, taught primarily to undergraduates, which drew students from food science and agribusiness, as well as occasionally other majors. This elective course was team-taught in a non-traditional way, without formal lectures, using case pedagogy and a student food product development project as major learning vehicles and featuring the team approach to NPD. The course took the perspective and emphasized the food science and business aspects of the product innovation process.

Meanwhile, Saint Joseph's has offered a required senior level course in new food product development for over 20 years, with an emphasis on the marketing side of NPD, particularly the areas of market analysis and product launch strategies. As part of an attempt to create a dialogue between the St. Joe's and Penn State food programs, faculty had an opportunity to meet and discuss the respective courses. We (Lam Hood, Spiro Stefanou and Barry Zoumas at Penn State and John Lord at Saint Joseph's) concluded

that the approaches used at the two schools were complementary, and decided that a prime opportunity for an institutional linkage existed. So, starting in fall 1998, the two NPD courses have been linked so that SJU students can take advantage of the Penn State competences in food science and agribusiness while PSU students can learn much about getting their new product to market successfully.

Rationale and Objectives

The rationale for the partnership is simply stated: two faculties with complementary skills provide potentially more learning opportunities for students. New product development in the food industry involves both technical and business-marketing issues and decisions. In the real world, food companies combine people from a variety of disciplines, including sensory analysis, packaging, legal, production, engineering, finance, marketing, research, and sales, to complete the hundreds (sometimes thousands) of activities required to successfully launch new products.

Previously, the Saint Joseph's course had "assumed away" the various technical and production challenges, and allowed students to concentrate primarily on opportunity analysis, ideation, consumer testing, and creation of both consumer and trade launch programs, without having to consider issues such as, "is this product technically feasible?" As a result, students created products with compelling consumer benefits. However, in numerous cases, these products could not have been produced. On the other hand, while the Penn State course was very strong on the business and technical sides, there was less recognition and understanding of the launch process, that is, the process of "selling in" the product to the retail grocery trade and to the household or foodservice customer. This is a very significant issue - if a new product is not "on the shelf," it cannot sell. Similarly, if a food company does not build awareness, trial and repeat purchase, even a technically sound product is bound to fail.

The faculty envisioned several key objectives for the partnership. The first was to put food science, agribusiness and food marketing students together in a situation where each cohort could gain an appreciation of the issues and principles guiding the other, closely replicating what had to happen in the "real" world. The second objective involved the use of project teams, and the enhancement of students' understanding of team processes and ability to work productively in teams. Teams, of course, are of critical importance not just in NPD, but also throughout the business world, as team building and teamwork are two of the skills that virtually every employer seeks. Teams are heavily used in business education generally so project teams are not particularly unique. However, the reality of having to work in teams with geographically distant team members is unique to education, but increasingly important to business.

The faculty team also identified the improvement of presentation skills as a key objective of the course, and secondarily the ability to be comfortable making a professional presentation in a distance-learning environment. The other significant course objective was to give students exposure to and practice in communication technologies - videoconferences, audio conferences, email, chat rooms, threaded discussions - that are becoming increasingly important to organizations.

Chronology

Initial meetings among the faculty were held during the spring and summer of 1998 to identify the best path to take. We had an ultimate goal - to create one joint course for two different (in terms of institution, location, and discipline) student cohorts. We were, however, initially careful to avoid being overly aggressive; it was clear that "we had to walk before we could run." As it turned out, we had to crawl before we could walk. Our first step was to schedule the respective courses in order to have a common time slot, a task that proved to be a little tricky since the academic calendar as well as daily class times differs between PSU and SJU. So we had to do a little bit of creative scheduling, but managed to find a weekly time slot lasting about 1 hour and 40 minutes long (out of 150 class minutes at SJU and 115 at PSU) that overlapped.

Year 1 - Fall, 1998

Both schools had already set up and were using distance education, at least on a small scale, so videoconferencing facilities were available at both campuses. We discovered very quickly that it was necessary to have an engineer at both sites during the class to connect the two campuses via videoconference and to troubleshoot any problems as they developed. In addition the engineers controlled all of the technology required in the classroom during the presentations. The Instructional Designers at the respective campuses instructed faculty, guest presenters and students on how to use the technology in an effective and instructional manner. The Instructional Designers also offered suggestions to faculty, students and guest presenters when incorporating technology.

We decided that during the first semester of the partnership, we could "share" food industry resources, that is, each faculty enlisted some volunteers from the food industry to do guest lectures on campus on a variety of topics pertinent to new food product development, so the simple idea was to let the Penn State students observe the Saint Joseph's presentations and vice versa. This was fairly easy to arrange and all guest presentations were held during the "common time" using videoconferencing to link the two classes. So for the first time, Penn State students were exposed to in-depth presentations on the marketing aspects of NPD and the Saint Joe's students gained some insight into food science and agribusiness issues. During the first year (fall semester 1998) we attempted to use WebCT (hosted at Penn State) to make course information available to students. There were many issues that prevented us from going forward with using WebCT, and we wound up changing platforms for year 2.

We faced critical issues early on. The languages of the two disciplines are significantly different and that, as a result, students had some trouble grasping concepts contained in presentations from the "other" discipline. Students took a very passive approach to the guest presenters. Also, students were both unfamiliar and somewhat uncomfortable with the videoconference environment. As a result, there was a distinct and somewhat disconcerting lack of student participation. Students needed to learn how to interact in this environment and to understand that the technology will sometimes be a distraction. In addition, we needed to force students into a role that would encourage them to be a participant.

We asked speakers to send PowerPoint presentations a few days before scheduled presentations so that the slides could be available to students ahead of time on the course website. In addition, we asked speakers to break their presentations into sections with natural breaks so that students could be engaged and required to listen more actively. Requiring students to ask the presenter questions pertinent to their projects helped to make students more accountable. We also attempted to present the speakers in a logical order, consistent with the "flow" of the product development process, so that the topic sequence was more logical for the students and easier to follow.

Both student sections of the course used a new product development project as a key vehicle to apply learning; during fall 1998, these projects ran concurrently but separately between the two classes. At the conclusion of the semester, the winning teams from each campus made project presentations to a panel of judges that was split between Philadelphia and State College. Students were required to present their final project to their class at their campus as well as to the class at the other location via videoconference. Students needed to practice how to communicate to a local audience and at the same time present to an audience at a remote location.

The faculty required the student teams to use PowerPoint as a presentation vehicle. As expected, the Penn State team did an excellent job with technical and business issues but put relatively little emphasis on product launch. Moreover, the Penn State students did not cover ideation; instead, students were assigned a new product idea. On the other hand, the Saint Joseph's team developed a creative product with solid packaging and compelling advertising, and did an excellent job with the retail sell-in, but wound up creating a product (a beer flavored with liqueur targeted to women) that was neither legal nor technically feasible. While this outcome was not surprising, it clearly demonstrated that we had to take the partnership to the next level.

Year 2 - Fall, 1999

For our second go-round in the fall semester of 1999, we retained all elements of the previous year's partnership with several changes and additions. First, we adopted CourseInfo 4.0 from Blackboard as the web-based software for the course. CourseInfo allowed us to post all announcements and documents, including the course expectations and syllabus, staff information, student information, faculty presentations and notes, project guidelines and materials, and speakers' presentations, on the web. CourseInfo also provided communication capabilities for individual, group or class email messages, plus chat rooms and threaded discussions. We segregated course information by developing separate folders in Blackboard for SJU and PSU. Students were encouraged to use the diverse information supplied from both campuses. What we discovered was students did not investigate any material outside of their required area of study. In addition the course structure during this time did not encourage students to communicate with each other after class hours.

Our second major change for year two was that we doubled the number of cross-institutional industry presentations. Most weeks we featured a guest speaker at one

campus or the other, presenting via videoconference. Also, early in the semester we scheduled a half-day at the Hershey Technical Center in Hershey, PA to allow the students from both schools to meet and engage in some team-building and bonding, plus to hear a presentation by a Hershey Foods VP on new product development at Hershey Foods.

We formed "quasi-teams" that linked a Saint Joe's student project team to a Penn State team, and mandated that these teams consult on each other's projects: the Penn State students offered technical and business advice and guidance and the Saint Joseph's students provided help with the marketing and product launch. Students communicated using several different media. Some of the overlapping class time was set aside for student teams to hold on-line meetings using videoconference or audio conference. Students could also communicate on-line or off-line using the facilities of CourseInfo.

The biggest change for 1999, however, was the completion of a new business facility at Saint Joseph's University - Mandeville Hall, funded primarily by USDA and gifts from the food industry. Mandeville Hall features state-of-the-art technology, including videoconferencing and audio conferencing facilities, as well as multimedia presentation capabilities in all classrooms and conference rooms. This facility significantly expanded our communication and presentation capabilities.

Following a request from our Penn State colleagues, we also decided to include two other universities (Monterrey Tech, Mexico and Texas A&M) in our videoconferences. We ultimately discovered that with the available technology four-way videoconferences were unrealistic. The communication link needed for four way videoconferences compromised the quality of the transmission between Penn State and Saint Joseph's.

Year 3 - Fall, 2000

Besides adopting an upgrade of CourseInfo, to version 5.0, the major leap forward was to create a true multidisciplinary, cross-campus course with a common syllabus and cross-institutional project teams. This took student interaction between the two campuses to a significantly higher level. We wound up, ultimately, with four project teams, each comprised of 3-4 SJU (food marketing) students and 2 PSU (food science and agribusiness) students. The project expectations were jointly decided by the faculty and were identical for both student cohorts. Each team was assigned a food company, did some preliminary market and consumer analysis to identify a new product opportunity, created a new product idea, and executed (or simulated) all of the activities involved from concept development through launch.

Teams met in person twice at the Hershey Technical Center; some joint class time was set aside for student meetings at a distance; and students used email, chat rooms, and additional audio and videoconferences to get together and execute their project. Each of the four faculty members served as a mentor/facilitator for a team. The teams made two preliminary presentations during the semester, a presentation of their business plan to the faculty, simulating a food company management committee, and a final "sell-in" presentation to two supermarket buyers at the conclusion of the semester. All of the

presentations were carried out via videoconference, and all the student teams used PowerPoint.

Spiro Stefanou, an expert in student assessment methodology, had created an elaborate assessment program for the course when it was first offered at Penn State. This methodology involved formal peer and team assessment by each team member at three junctures of the course, with feedback to the teams after the first two (mid-semester) evaluations. For year 3, we adapted this assessment program to the cross-institutional project teams. We found that these assessments helped to highlight perceived shortcomings and get teams to function more effectively. Of course, the fact that 20% of the course grade was based on the final peer evaluation scores served as an important motivator for effective teamwork.

The Experience: Highlights and Lowlights

After three semesters of the Penn State-Saint Joseph's joint new product development course, we have reached several conclusions. First, philosophically and pedagogically, the partnership makes great sense. Students really benefit from seeing the whole picture of the NPD process. Second, the participating faculty members have learned a great deal from each other, enhancing our ability to effectively teach new product development and innovation. Third, the food industry seems to embrace our educational approach; virtually everyone we have spoken with indicates that more of this type of cross-disciplinary, team-based education is needed. Fourth, the students who have completed the course, while experiencing many frustrations caused by a very different way of doing things, understand that their exposure to this unique educational approach does prepare them well for dealing with some of the challenges they can expect to face in their careers.

On the other hand, this is by far the most demanding course any of the participating faculty members have ever taught (and the combined experience exceeds 75 years). The amount of planning and coordination proved to be much more than any of us expected, as is the frustration created by technical problems with videoconferences and the course web platform. We have found that trial and error is the only real way to learn about the nuances of various technologies and much of the trial takes place during class. Despite outstanding technical support at both campuses (faculty members were responsible for course content and process, but instructional design and technology specialists set up and ran the videoconferences and provided access to CourseInfo), there were frequent times, especially in years 1 and 2, when things simply did not work. We learned from each occasion, made numerous changes, and improved dramatically from year 1 to year 3. But we found that students expect television quality, first time and every time. They are intolerant of technical problems, even those we solved relatively quickly. Students admitted that sometimes even minor technical glitches caused them to "tune out," rendering our efforts, and those of industry experts, much less effective.

We also found that the distance between Philadelphia and State College (200 miles) and differences in campus culture and scheduling create real and significant barriers to effective teamwork. Despite the attention to and opportunities for team-building, creation of formal team contracts, faculty mentoring, and setting up numerous and frequent

opportunities to communicate, all of the teams had problems "getting together" and the teams functioned much less effectively than we expected. The team of faculty and instructional design specialists noted that students were used to a more structured approach to receiving information and communicating with the professor and colleagues. Students rarely took the initiative to investigate how they could communicate and research information in ways different from those they have typically used to accomplish those tasks.

Students were frustrated with having to communicate with their groups at a distance. Very different class schedules between the two campuses and among team members, and the task of arranging facilities made it difficult to find times when teams could meet to discuss their projects. They limited themselves to communicating using videoconference and audio conference technologies. Team mentors took some of the initiative to arrange and oversee team meetings, but this effort was not equivalent across the four teams. Students did not take advantage of other available technologies. They were encouraged to use CourseInfo (using chat rooms, threaded discussions and email) to communicate within their groups, but generally did not utilize these means of communication. Final presentations in year 3 demonstrated that cross-functional teamwork helped to prevent egregious errors and omissions from the new product development projects. However, the overall quality of the four group presentations was uneven.

It is interesting to note that two of the major reasons cited for failure of new products are: (1) a new product idea is ahead of its time, and (2) the new product requires a significant behavioral change on the part of the consumer. Analogously, our attempt to use cross-campus, cross-disciplinary partnerships requires a significant change in both student and faculty behavior. And like any other innovation, it takes a while to successfully effect such a change, and it happens only gradually.

Next Steps

Year 4 of the PSU-SJU partnership will take place during the fall 2001 semester. The guiding philosophy and key objectives of the partnership remain the same but the details of implementation are going to change somewhat. We will have common class time each week for guest speakers and cross-campus instruction. The courses at Penn State and Saint Joseph's will run parallel but separately. We will share resources, including faculty resources, as we have done. In fact, the faculty members will take a more active role in working with students at the other campus. And we will continue to have a common course syllabus and website so that students at both campuses have access to all course materials and can communicate with each other. And we will have the same project expectations at both schools. The teams will be school-specific. We are not backing away from the cross-institutional model but we are adjusting our approach until we learn how to make cross-campus project teams work more effectively.

In order to generate the benefits of the unique discipline focus at each school, we will set up opportunities during our joint classes for students to advise and critique their counterparts. SJU students will be required to incorporate technical and business issues in their projects, and they will receive advice and counsel from PSU students on these

issues; similarly, the SJU students will help the PSU students with their marketing programs and launch plans. Both preliminary and final project presentations will involve both groups of students presenting via videoconference, plus questions from judges for all of the groups at both schools. In this manner, we hope to maintain the benefits of the partnership but minimize the problems and frustrations.

Conclusion

Partnerships and alliances are a fact of life in the business world, as is the need for effective team building and functioning. To the extent that students can learn these skills in addition to normal course content, we enhance the value of our students' education. Advances in communications technology provide increasing opportunity to teach these skills. This paper describes one educational initiative that, using videoconferencing and web technology, has linked two campuses, two faculties and two groups of students. Much was accomplished, but much more needs to be done to make such a partnership truly viable.

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